


# How Conflicted Are Farmers About Meat? Livestock Farmers' Attachment to Their Animals and Attitudes About Meat

Chloe Crawshaw<sup>1</sup>, Jared Piazza<sup>1</sup> 

[1] *Department of Psychology, Fylde College, Lancaster University, Lancaster, United Kingdom.*

---

Psychology of Human-Animal Intergroup Relations, 2022, Vol. 1, Article e8513, <https://doi.org/10.5964/phair.8513>

**Received:** 2022-03-10 • **Accepted:** 2022-07-26 • **Published (VoR):** 2022-12-01

**Handling Editor:** Brock Bastian, University of Melbourne, Melbourne, Australia

**Corresponding Author:** Jared Piazza, Department of Psychology, Fylde College, Lancaster University, LA1 4YF, Lancaster, United Kingdom. E-mail: [j.piazza@lancaster.ac.uk](mailto:j.piazza@lancaster.ac.uk)

**Supplementary Materials:** Data [see [Index of Supplementary Materials](#)]



## Abstract

Livestock farmers depend on animal slaughter for their livelihood while also being responsible for their animals' welfare. This study explored how farmers psychologically manage this ambivalent relationship with their animals. Seventy-two meat-eating livestock farmers participated, as well as 99 meat-eating and 103 meat-avoiding, non-farmer pet owners, living in the UK. Participants were assessed on their attachments to their pets and farmed animals (the latter for farmers only), the perceived cognitive abilities of cows (relative to dogs), their degree of conflict about meat and the perception of viable alternatives to meat. Farmers exhibited the lowest levels of meat conflict and perception of alternatives to meat. They were less attached to their farmed animals than their companion animals, and farmed animal detachment correlated, albeit weakly, with lower conflict. Farmers did not attribute more mental capacities to cows than non-farmers. Overall, denial of mind to cows and denial of alternatives related to lower levels of meat conflict. These findings suggest that farmers do not experience much conflict about meat and this lack of conflict is sustained through a combination of dissonance-avoidance strategies, including detachment, denial of mind, and denial of choice.

## Keywords

attachment, farmers, meat conflict, farmed animals, cognitive dissonance



This is an open access article distributed under the terms of the [Creative Commons Attribution 4.0 International License](#), CC BY 4.0, which permits unrestricted use, distribution, and reproduction, provided the original work is properly cited.

## Non-Technical Summary

### Background

This research applies cognitive dissonance framework to illuminate the attitudes livestock farmers, and non-farmers, experience towards meat and the animals used to produce meat.

### Why was this study done?

To better understand the psychological processes involved in preserving and defending meat among those directly involved in its production.

### What did the researchers do and find?

Seventy-two meat-eating livestock farmers, 99 meat-eating non-farmers, and 103 meat avoiders completed a survey about their attachments to farmed and companion animals, the minds of farmed animals, and attitudes about meat. Farmers were less attached to their farmed animals than companion animals, and experienced the lowest levels of conflict about meat. Lower levels of conflict were found among farmers and non-farmers who detached themselves from farmed animals, denied farmed animals minds, and denied there are viable alternatives to meat.

### What do these findings mean?

The findings reveal how psychological conflict about meat can be avoided through three “Ds”: 1. Detaching oneself from animals, 2. Denying animals sophisticated minds, and 3. Denying that humans have good alternatives. Efforts to loosen societal dependence on meat can benefit from addressing these three Ds.

Recently, there have been media reports of livestock farmers sending their animals to sanctuary and transitioning to crop-only farming, allegedly fuelled by the emotional conflict caused by sending their animals to slaughter (e.g., Söderfeldt, 2017; Wicker, 2017). One report described how an organic beef farmer had come to perceive his cattle to possess complex emotions and personalities, and so transitioned to vegetable farming (Wicker, 2017). Another report suggested that some farmers will “turn off their feelings” and create psychological distance from their animals to help them perform the task (Söderfeldt, 2017). Though anecdotal and sporadic, these reports suggest that some livestock farmers may experience ambivalence about their role in meat production, however, such reports may not represent what is typically experienced by farmers. Indeed, one recent study of pig farmers found that they did not ascribe pigs with diminished cognitive capacities relative to non-farmers (Peden et al., 2020). These findings suggest that pig farmers might not experience high levels of conflict about their involvement that would lead them to deny pigs the capacity to suffer as a strategy to avoid or reduce

this conflict. Nonetheless, this research did not directly measure conflict over meat, warranting continued investigation.

Non-farmer consumers experience varying degrees of psychological conflict about their meat consumption (e.g., [Buttler & Walther, 2018](#); [Graça et al., 2015](#)). This seems to be especially true for women ([Ruby, 2012](#)), urban-dwellers ([Bray et al., 2016](#)), and young adults ([Kubberød et al., 2002](#)). The experience of psychological conflict (or dissonance) is aversive, thus, meat consumers may be motivated to extinguish these feelings when they occur (e.g., [Rothgerber, 2014](#)). The normativity and pervasiveness of meat consumption may also *prevent* dissonance from occurring for many consumers. Animal slaughter usually happens away from view and meat products are ubiquitous, which facilitates habituation ([Bastian & Loughnan, 2017](#)).

Here, we sought to explore whether livestock farmers typically experience conflict about the production of meat at levels comparable to meat consumers without commercial farming experience. Farmers have frequent contact with the animals in their care. This might be reason to believe that farmers experience *greater* conflict than that experienced by non-farmers. However, consistent with the theorising of [Bastian and Loughnan \(2017\)](#) and [Rothgerber and Rosenfeld \(2021\)](#), we surmised that farmers have internalized a number of “dissonance-avoidance” processes, including detachment, denial of animal mind, and denial of choice, that serve to normalise and reinforce the behaviour of meat consumption.

## Farmed Animals and Detachment

Livestock farmers directly contribute to the production of meat. Furthermore, farmers are often themselves meat eaters. However, they also invest a great deal of time, energy, and resources into animal husbandry, sheltering and feeding their animals, and caring for their health and wellbeing (e.g., [Brujinis et al., 2013](#)). This paradoxical relationship with farmed animals, arguably, requires deep-seated, dissonance-avoidance mechanisms to shield against the potential for recurring ethical conflict ([Bastian & Loughnan, 2017](#)). One potential mechanism may be *detachment* or keeping psychological and emotional distance between oneself and the animal. [Wilkie \(2005\)](#) proposed that human-livestock relations range from “attached attachment,” where the animals are regarded much like companion animals, to “detached detachment,” where the animals are regarded exclusively as products, with many livestock farmers operating in between, i.e., “detached attachment” (see also [Bock et al., 2007](#)).

One way to test whether farmers engage in detachment strategies is by contrasting the attachments they form with their companion animals that are not destined to the same fate as livestock. [Wilkie \(2005\)](#) used an interview method and found that livestock farmers reported deeper attachments with their pets than farmed animals. Attachments to farmed animals were stronger among recreational or ‘hobby’ farmers who have prolonged interactions with their animals because the animals are not intended for slaugh-

ter. Wilkie concluded that, in stark contrast with the tendency for pet owners to develop strong attachments with their animals, close relationships among commercial farmers and their livestock are arguably incompatible with the utilitarian values of commercial farming, which treats animals mainly as a means for profit.

## Aims of the Present Study

The present study had three central aims linked to the overarching question of whether livestock farmers might experience conflict in relation to meat and animal slaughter. First, we sought to explore the degree to which livestock farmers experience psychological conflict about meat production. To this end, we assessed livestock farmers on their level of “omnivore conflict” (i.e., degree of attitudinal conflict about meat), and we compared farmers with two suitable reference groups: omnivorous and meat-avoiding non-farmers. Consistent with theorising about dissonance avoidance (e.g., Bastian & Loughnan, 2017), we expected that farmers would exhibit the lowest levels of omnivore conflict, relative to both reference groups, on account of their high degree of personal, commercial investment in meat production. While meat consumers also benefit from meat, they do not reap the commercial benefits.

Second, to help account for farmers' low levels of omnivore conflict, if observed, we sought to explore whether livestock farmers might exhibit several dissonance-avoidance strategies, related to (a) detachment; (b) denial of mind; and (c) denial of choice. It should be noted that for these behaviours to be “strategic” they need not be deliberate or conscious; they only need to help mitigate dissonance (Rothgerber & Rosenfeld, 2021). With regards to detachment, we examined the nature and depth of farmers' attachments with their farmed animals and contrasted these attachments with those formed with their companion animals. We expected livestock farmers to be *less* attached to their farmed animals than their household pets. To show that this detachment process is uniquely (and perhaps tactically) directed towards farmed animals and not a general tendency of farmers to detach from animals, we contrasted farmers' pet attachments with those of non-farming pet owners, both omnivores and meat avoiders. If all three groups are equally capable of developing attachments with their companion animals, then they should show comparable levels of attachment.

Regarding denial of mind, we sought to contrast the cognitive-trait attributions of livestock farmers with those of non-farming omnivores and meat avoiders. Our comparison groups allow for a *graded* contrast where farmers benefit the most from animal slaughter, with both financial and consumer benefits, followed by non-farmer omnivores, and least of all meat-avoiders. We reasoned that if farmers utilize denial of mind strategies to avoid experiencing dissonance (e.g., Bastian et al., 2012; Rothgerber, 2014), then they should attribute significantly lower levels of mind to farmed animals (e.g., cows) than both comparison groups, since they benefit most if such animals *lack* such traits. Regarding denial of choice, we investigated the extent to which each group endorsed the

belief that there are viable alternatives to meat by adapting the “perception of choice” items of Bard et al. (2010) to relate to meat consumption. We expected farmers to exhibit the lowest levels of perceived choice, relative to omnivores and meat avoiders, for the same reasons outlined for denial of mind.

Finally, we sought to explore the degree to which these three “dissonance-avoidance” strategies might relate to omnivore conflict. Arguably, if detachment, mind denial, and low perceived choice shield against the experience of dissonance, we should observe significant relationships between these measured variables and omnivore conflict; that is, less conflict should be observed; (a) among farmers that detach more from their farmed animals, and among individuals (farmers and non-farmers) that, (b) deny cows’ minds and (c) fail to perceive alternatives to meat.

To test these hypotheses, we recruited livestock farmers from Gloucestershire and Lancashire, England, and non-farmer pet owners based in the UK, including omnivores and meat avoiders. Participants completed a questionnaire that probed their attachments to farmed and companion animals, the mental abilities of cows (relative to dogs), and their beliefs and attitudes towards meat production. The hypotheses, materials, and an analysis plan were preregistered (see the [Supplementary Materials](#)). The preregistration was submitted after the data was collected and we deviated somewhat from the initial plan (e.g., because of non-normal data). Thus, the study should be considered exploratory in many respects (see [Supplementary Materials](#) for details). An anonymized version of the data and study materials can be found in the [Supplementary Materials](#).

## Method

### Participant Recruitment and Exclusions

We recruited three groups of participants: individuals with experience of livestock farming (*farmers*), and two comparison groups of individuals with experience owning companion animals: those that eat meat (*meat eaters*) and those that do not (*meat avoiders*). See the [Supplementary Materials](#) for recruitment details. Our preregistered recruitment plan was to recruit a minimum of 100 participants per group. We reasoned that 100 farmers was a practical optimum we could achieve given our resources and logistical constraints on recruitment (e.g., farmers count for approximately 0.3% of the UK population; Office for National Statistics, 2021). Group sizes of 100 would give us > 95% power to detect medium size group differences ( $d = 0.5$ ). To qualify for the study, meat avoiders and meat eaters had to be pet owners. A total of 323 participants consented to participate: 99 adults with farming experience and 224 adult pet owners (111 meat-eaters and 113 meat-avoiders). Forty-one participants who responded to fewer than two thirds of any single scale were excluded. Five farmers were excluded who reported not having experience of owning both farmed and companion animals. Additionally, two farmers

who reported having a pescatarian diet were excluded as they were the only farmers that did not eat meat. Finally, one meat avoider was excluded that nominated a sheep as their companion animal.

Person-mean substitution was used to backfill missing responses for 13 participants (7 farmers, 1 meat eater, 5 meat avoiders). Person-mean substitution avoids the issues of only using listwise deletion or mean imputation which unreliably estimate variance (Hawthorne & Elliott, 2005). Below, we report the analysis using person-mean substitution and with the farmer pescatarians removed ( $N = 274$ ). For analyses on samples using listwise deletion ( $N = 261$ ) or with the two pescatarian farmers included ( $N = 276$ ), see the [Supplementary Materials](#). The results are highly similar across the three data sets.

See [Table 1](#) for the demographics of the final sample and the [Supplementary Materials](#) for farmers' work experience. Male farmers predominated (72.2%) not unlike estimates based on a national survey (80.6%) conducted between July 2020 and June 2021 in the UK (Office for National Statistics, 2021). The three groups were further organised with regards to dietary lifestyle. *Meat eaters* included meat lovers, omnivores, semi-vegetarians and reductarians. *Meat avoiders* included pescatarians, lacto-ovo vegetarians, strict vegetarians, dietary vegans, and lifestyle vegans, see [Table S1](#) in the [Supplementary Materials](#) section. Pescatarians were included as meat avoiders as our farmers did not have experience of working on fish farms and the research materials focused on land animals.

**Table 1**

*Demographic Information for the Three Sample Groups*

Demographic	N	Age (in years)		Gender		
		M	SD	Male	Female	Non-binary
Farmers	72	48.86	16.49	52	20	0
Meat eaters	99	37.23	17.98	27	70	2
Meat avoiders	103	37.67	13.48	8	94	1
Total	274					

## Design and Procedures

We used a single variable (group) independent-measures design with three levels: farmer meat eaters, non-farmer meat eaters, and non-farmer meat avoiders.<sup>1</sup> Participants took part in an online questionnaire on Qualtrics® (or a pencil-and-paper version) that explored “their experiences with animals and the types of traits they believed animals to

1) We have one cell missing for a 2 (farmer vs. non-farmer) x 2 (meat eater vs. meat avoider) design. We were unable to obtain a sufficient number of ‘farmer meat avoiders’ for a full 2 x 2 design.

possess". There were two versions of the questionnaire: a longer version for farmers that included questions on attachment/solidarity with farmed animals; non-farmers received a version without these questions—both versions are available at the [Supplementary Materials](#) section. For farmers, the order of the companion and farmed animal sections were randomised to control for order effects. Study duration was  $M = 15.51$  min for farmers and 8.56 min for non-farmers.

## Ethical Statement

The study was approved by the host university's Department of Psychology Ethics Committee. Participation was anonymous and farmers were not asked to disclose the name or location of their farm. All participants gave their informed consent, were debriefed, reminded of their right to withdraw, and thanked.

## Materials

The questionnaire included demographic measures, two measures of attachment with farmed and companion animals (attachment and solidarity), mind attribution (to cows), perception of choice regarding meat, and omnivore conflict.

## Demographics, Diet, and Experience With Animals

Participants provided their age, gender, and self-classified their diet (see see Table S1 in the [Supplementary Materials](#) section). Farmers additionally provided information on their length of involvement in farming and the type of farm(s), current and past. To measure experience with animals, a list of 13 types of farmed and companion animals was created using the World Bank's Livestock Ownership Survey (Zezza et al., 2016) and the Childhood Pet Ownership Questionnaire (Paul & Serpell, 1993), respectively. Participants indicated which animals that they had frequent interaction with—see Figure S1 in the [Supplementary Materials](#) section for frequencies by animal and dietary group.

## Attachment and Solidarity With Animals

A shortened version of Holcomb et al.'s (1985) CENSHARE Pet Attachment Survey was used to measure participants' emotional attachment to their companion animal. All participants nominated a companion animal that they had "frequent contact within their home", and farmers, additionally, nominated a "farm animal" with which they had frequent contact—see Table 2 for a list of nominated animals. Farmers could nominate a working animal (e.g., sheep dog) if they did not have a companion animal. The scale included 12 items (see [Supplementary Materials](#)), e.g., "You consider your farm animal to be a member of your family". Action frequency was rated on 1–4 scales (1 = *Almost never*; 4 = *Almost always*), with higher scores representing greater attachment to the target animal. The scale had good reliability ( $\alpha_{\text{pet}} = .83$ ;  $\alpha_{\text{farmed}} = .86$ ).

**Table 2***Nominated Companion Animals for the Three Groups: Count and Percentage*

Farmers		Meat Eaters		Meat Avoiders	
Animal	Count (%)	Animal	Count (%)	Animal	Count (%)
<i>Companion animals</i>					
Cat	8 (11.1)	Bird	1 (1.0)	Cat	39 (37.9)
Dog	56 (77.8)	Cat	32 (32.3)	Dog	58 (56.3)
Pony	1 (1.4)	Dog	60 (60.6)	Guinea pig	1 (1.0)
Sheepdog	7 (9.7)	Fish	2 (2.0)	Hamster	2 (1.9)
		Gecko	1 (1.0)	Rabbit	2 (1.9)
		Guinea pig	1 (1.0)	Named pet	1 (1.0)
		Horse	1 (1.0)		
		Rabbit	1 (1.0)		
<i>Farmed animals</i>					
Bull	13 (18.1)				
Calf	3 (4.2)				
Cow	29 (40.3)				
Heifer	1 (1.4)				
Sheep	26 (36.1)				

Solidarity entails the level of identification one experiences towards an individual or group. Amiot and Bastian's (2017) Solidarity with Animals scale was adapted for use with the nominated companion animal and (for farmers) the farmed animal. The scale included five items, such as "I feel a strong connection to my pet"; "I feel committed toward my farm animal". Level of agreement was rated from 1 = *Strongly Disagree* to 7 = *Strongly Agree*. The scale had high reliability ( $\alpha_{\text{pet}} = .92$ ;  $\alpha_{\text{farmed}} = .91$ ).

Farmers' attachment to their farmed animals and their solidarity with them correlated modestly (see Table 3), and so we treated these measures as related but distinct facets of attachment.



**Table 3**

*Spearman's Rho Correlations Coefficients and 95% Confidence Intervals (in Brackets) Between Age, Animal Attachment and Solidarity, Mind Attribution, Perception of Choice, and Omnivore Conflict*

Variable	2	3	4	5	6	7	8
1. Age	-.05 [-.31, .20]	.07 [-.18, .32]	-.03 [-.15, .10]	.07 [-.06, .19]	-.29*** [-.39, -.18]	-.12* [-.24, -.01]	-.22** [-.33, -.12]
2. Farmed animal attachment	—	.61*** [.40, .76]	.52** [.33, .67]	.22 [-.02, .42]	.24* [-.01, .46]	.06 [-.19, .29]	.18 [-.06, .42]
3. Farmed animal solidarity		—	.47*** [.25, .66]	.56*** [.36, .70]	.17 [-.06, .37]	-.10 [-.33, .15]	.25* [.00, .46]
4. Companion animal attachment			—	.60*** [.51, .68]	.11 [-.01, .24]	.14* [.02, .025]	.18** [.06, .31]
5. Companion animal solidarity				—	.19** [.07, .29]	.21*** [.10, .32]	.22*** [.11, .33]
6. Mind attribution					—	.45*** [.33, .54]	.50*** [.41, .59]
7. Perception of choice						—	.82*** [.78, .86]
8. Omnivore conflict							—

*Note.* Variables 2 and 3 only included farmers ( $n = 72$ ). All other correlations include the full sample ( $N = 274$ ).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

### Mind Attribution

We assessed participants' attributions of a farmed animal, cows, in direct comparison with a companion animal, dogs, using 18 abilities from Gray et al.'s (2007) Mind Attribution scale. The scale includes both "experience" and "agency" traits (seven experience items, e.g., "Experiencing physical or emotional pain", and 11 agency items, e.g., "Making plans and working towards goals"). Participants rated on a 1–5 scale whether cows vs. dogs are more capable of each ability (1 = *Dogs are much more capable than cows*; 5 = *Cows are much more capable than dogs*), with the midpoint representing equivalent possession of the trait. Dogs were chosen as they are the most common type of pet in the UK (Bedford, 2021). Cows were chosen as many of the farmers identified for the study were dairy farmers. The 18 items formed a reliable index of mind attribution and were aggregated ( $\alpha = .91$ ).

### Perception of Choice

Belief in the existence of viable alternatives to using animals for food was assessed using a modified version of Knight et al.'s (2010) 4-item Perceptions of Choice Scale (e.g., "There is no substitute to using animals for food" [reverse scored]; "Humans don't have to use animals for food"), rated in terms of agreement from 1 = *Strongly Disagree* to 7 = *Strongly Agree* ( $\alpha = .90$ ).

### Omnivore Conflict

Level of experienced dissonance or conflict about meat was assessed using Ruby et al.'s (2022) 6-item Conflicted Omnivore Scale (e.g., "I am okay with how animals raised for food are treated" [reverse scored]), rated in terms of agreement on a 7-point Likert scale ( $\alpha = .93$ ). See [Supplementary Materials](#) for items.

## Results

### Analysis Plan

All analyses were carried out using SPSS (IBM, 2017). The analysis plan involved, first, testing the distributions of each variable. Shapiro-Wilk tests showed that the assumption of normality was violated for all variables (for details see Table S2 in the [Supplementary Materials](#) section). Therefore, non-parametric tests were used. We checked for group-level differences in age (see [Supplementary Materials](#) for details) and Spearman's Rho correlations were conducted between age and the key variables (see Table 3). Age correlated significantly with mind attribution, perception of choice, and omnivore conflict, and therefore was included as a covariate for analyses involving these variables.

A Pearson's Chi-squared test showed that gender significantly differed between the three groups,  $\chi^2(4, N = 274) = 83.73, V = .39, p < .001$ , with more males in the farmer

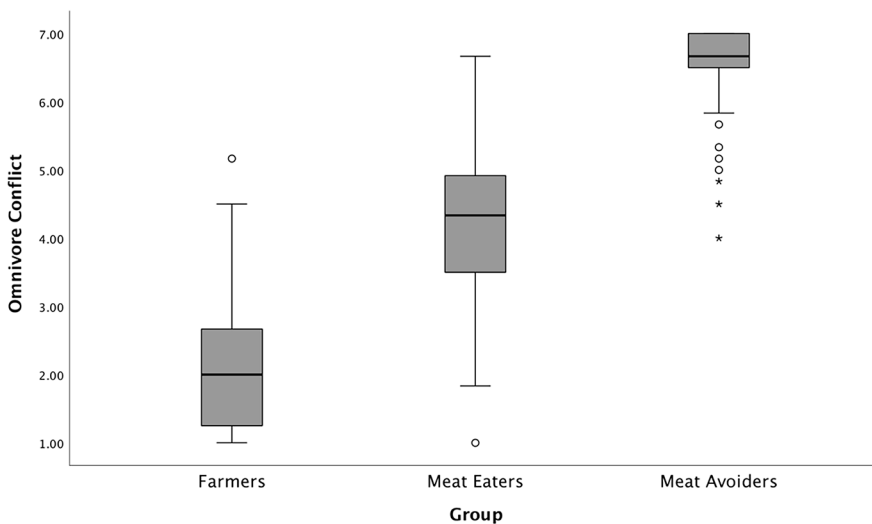
group than females, consistent with national statistics for livestock farmers (Office for National Statistics, 2021). By contrast, there were more females than males in the non-farmer groups (see Table 1). Since the distribution of gender in each group was highly skewed, we did not investigate the role of gender within our analysis (this decision was preregistered).

## How Conflicted Are Farmers?

A Wald Chi-squared test revealed that the groups significantly differed in their level of omnivore conflict,  $W^2(2, N = 274) = 200.57, V = .60, p < .001$ , and no effect of age,  $W^2(1, N = 274) = 1.11, V = .06, p = .291$ . Follow-up Kruskal-Wallis tests showed that meat avoiders experienced the highest levels of meat conflict,  $M_{\text{rank}} = 220.22, SD = 33.91, 95\% \text{ CI } [213.59, 226.85]$ , significantly more conflict than farmers,  $M_{\text{rank}} = 47.01, SD = 35.14, 95\% \text{ CI } [38.76, 55.27]$ ,  $H(1) = 127.86, \epsilon^2 = .73, p < .001$ , and meat-eaters,  $M_{\text{rank}} = 117.25, SD = 41.16, 95\% \text{ CI } [109.04, 125.45]$ ,  $H(1) = 136.34, \epsilon^2 = .68, p < .001$ . Though not preregistered, for group-comparison tests we applied a Bonferroni correction of alpha  $p = .05/3 = .0167$ . As predicted, farmers experienced the lowest levels of conflict, significantly less conflict than non-farmer meat eaters,  $H(1) = 77.85, \epsilon^2 = .46, p < .001$  (see Figure 1).

**Figure 1**

*Box Plots of Omnivore Conflict by Group With Median Scores Depicted Inside Each Box*



## Do Farmers Form Attachments to Their Farmed Animals?

A Wilcoxon signed-rank test showed, as predicted, farmers perceived significantly greater attachments to their pet animals,  $Mdn = 3.50$ ,  $SD = 0.46$ , 95% CI [3.27, 3.48], than to their farmed animals,  $Mdn = 2.25$ ,  $SD = 0.55$ , 95% CI [2.23, 2.49],  $Z = -7.28$ ,  $r = -.86$ ,  $p < .001$ . Likewise, farmers perceived greater solidarity with their pet animals, ( $Mdn = 6.80$ ,  $SD = 0.93$ , 95% CI [6.05, 6.49]), than with their farmed animals,  $Mdn = 4.90$ ,  $SD = 1.29$ , 95% CI [4.72, 5.33],  $Z = -6.50$ ,  $r = -.77$ ,  $p < .001$ .

There were no significant differences in pet attachment across the three groups, according to a Kruskal-Wallis test,  $H(2) = 4.10$ ,  $\epsilon^2 = .02$ ,  $p = .129$ , suggesting similar levels of attachment to companion animals among farmers and non-farmers. However, the groups did differ significantly on solidarity with pets,  $H(2) = 16.34$ ,  $\epsilon^2 = .06$ ,  $p < .001$ . Mann-Whitney U tests revealed that meat avoiders,  $M_{rank} = 160.40$ ,  $SD = 62.13$ , 95% CI [148.26, 172.54], identified with their pets more than farmers,  $M_{rank} = 128.19$ ,  $SD = 80.73$ , 95% CI [109.22, 147.16],  $U(N_{farmer} = 72, N_{meat-avoider} = 103) = 2880.00$ ,  $Z = -2.80$ ,  $\eta^2 = .04$ ,  $p = .005$ , and non-farmer meat eaters,  $M_{rank} = 120.44$ ,  $SD = 74.43$ , 95% CI [105.59, 135.28],  $U(N_{meat-eater} = 99, N_{meat-avoider} = 103) = 3567.50$ ,  $Z = -3.96$ ,  $\eta^2 = .08$ ,  $p < .001$ , whereas farmers and meat eaters did not differ,  $U(N_{farmer} = 72, N_{meat-eater} = 99) = 3406.00$ ,  $Z = -0.52$ ,  $\eta^2 = .00$ ,  $p = .606$ .

In sum, farmers formed weaker attachments to their farmed animals than to their household companion animals, which were at comparable levels as non-farmer meat eaters.

## Group Differences in Attributing Minds to Cows

A Wald Chi-squared test showed significant group differences in the attribution of minds to cows,  $W^2(2, N = 274) = 81.76$ ,  $V = .39$ ,  $p < .001$ , and a significant effect of age,  $W^2(1, N = 274) = 26.74$ ,  $V = .31$ ,  $p < .001$ . Follow-up Kruskal-Wallis tests revealed that meat avoiders,  $M_{rank} = 192.48$ ,  $SD = 64.94$ , 95% CI [179.79, 205.17], attributed significantly more mind to cows than farmers,  $M_{rank} = 113.01$ ,  $SD = 71.80$ , 95% CI [96.14, 129.88],  $H(1) = 43.39$ ,  $\epsilon^2 = .25$ ,  $p < .001$ , and meat eaters,  $M_{rank} = 98.11$ ,  $SD = 64.24$ , 95% CI [85.29, 110.92],  $H(1) = 71.44$ ,  $\epsilon^2 = .36$ ,  $p < .001$ , whereas farmers and meat eaters did not differ,  $H(1) = 1.57$ ,  $\epsilon^2 = .01$ ,  $p = .210$ .

## Denial of Choice Regarding Meat

The groups significantly differed on perception of choice,  $W^2(2, N = 274) = 177.80$ ,  $V = .57$ ,  $p < .001$ , and there was no effect of age,  $W^2(1, N = 274) = 1.25$ ,  $V = .07$ ,  $p = .265$ . Follow-up Kruskal-Wallis tests revealed that meat avoiders,  $M_{rank} = 215.36$ ,  $SD = 26.76$ , 95% CI [210.13, 220.59], perceived significantly more choice than farmers,  $M_{rank} = 59.71$ ,  $SD = 49.23$ , 95% CI [48.14, 71.28],  $H(1) = 132.56$ ,  $\epsilon^2 = .76$ ,  $p < .001$ , and meat eaters,  $M_{rank} = 113.07$ ,  $SD = 53.49$ , 95% CI [102.40, 123.74],  $H(1) = 126.40$ ,  $\epsilon^2 = .63$ ,  $p < .001$ , and

meat eaters perceived significantly more choice than farmers,  $H(1) = 40.51$ ,  $\epsilon^2 = .24$ ,  $p < .001$ . Thus, as expected, farmers perceived there to be fewer viable alternatives to meat consumption than the other groups.

## Do These Strategies Reduce Conflict About Meat?

We used correlation analysis to test this last set of questions. The analysis of attachment focused on farmers ( $n = 72$ ). As depicted in Table 3, there was a weak, albeit non-significant, correlation between omnivore conflict and farmers' attachment to their farmed animals,  $r_s(70) = .18$ ,  $p = .064$ . There was a small, significant correlation between omnivore conflict and farmers' solidarity with their farmed animals,  $r_s(70) = .25$ ,  $p = .017$ . Thus, farmed-animal attachment was weakly related to one measure of conflict about meat among farmers, suggesting that detachment from farmed animals may relate, in a small way, to dissonance avoidance.

The analysis of mind attribution and perception of choice included all three groups ( $N = 274$ ). There was a moderate positive correlation between omnivore conflict and attribution of mind to cows,  $r_s(272) = .50$ ,  $p < .001$ , 95% CI [.40, .59], which held when controlling for age,  $r_s(271) = .46$ ,  $p < .001$ , 95% CI [.30, .50]. Thus, the less participants attributed mind to cows, the less they experienced conflict about meat. Finally, there was a strong positive correlation between omnivore conflict and perception of choice,  $r_s(272) = .82$ ,  $p < .001$ , 95% CI [.78, .86], that held when controlling for age,  $r(271) = .81$ ,  $p < .001$ , 95% CI [.75, .86]. That is, the less participants perceived there to be alternatives to meat consumption, the less conflicted they felt about it.

## Discussion

The present study explored the relationships that farmers have with their animals and found that farmers largely maintain emotional distance from their farmed animals. Farmers were less attached to their farmed animals than household companion animals, and this detachment appeared *strategic* insofar as farmers' emotional attachments to their companion animals were on par with those formed by non-farmer omnivores. Thus, their diminished attachments to farmed animals cannot be attributed to a diminished capacity to bond with animals in a general sense.

Of critical importance, farmers exhibited low levels of conflict about meat, lower than non-farmer meat eaters and meat avoiders. Thus, the act of psychologically distancing themselves from their farmed animals may help preserve their commercial interests. Denying that farmed animals, like cows, have rich minds, and doubting the viability of meat alternatives, also seemed to contribute to preserving a largely positive view of animal agriculture and meat production: individuals who perceived cows to lack important

emotional and cognitive capacities, and who were sceptical that viable alternatives to animal slaughter exist, tended to be less conflicted about meat consumption.

We interpret these findings through the lens of cognitive dissonance theory as applied to meat consumption (e.g., Bastian & Loughnan, 2017; Buttlar & Walther, 2018; Rothgerber & Rosenfeld, 2021). Past studies have shown that meat eaters engage in several strategies to avoid the experience of psychological conflict about meat. Here, we extend this literature by demonstrating that livestock farmers exhibit at least three different “dissonance-avoidance” strategies: detachment, denial of mind, and denial of choice. We also provided initial evidence for the dissonance-reducing power of these behaviours, though further research is needed to establish the role of detachment more firmly in this regard.

## Limitations

There are several limitations with our study that constrain the conclusions. First, group was not a randomized variable, thus, it is not possible to separate the distal causes leading someone to *become* a livestock farmer from the proximal effects of *being* a livestock farmer. Second, we observed only weak to moderate relationships between farmed animal attachment and meat conflict among our farmers, and the relationship between attachment and conflict only reached significant levels for the solidarity measure. We might speculate that the solidarity scale correlated stronger because it utilises more abstract ways of relating to animals, compared to the attachment scale, which focuses on concrete actions, some of which are animal-led (e.g., “Your farm animal tries to stay near by following you”). Sub-optimal levels of statistical power within the farmer group was a limitation. Despite our best efforts to recruit livestock farmers, this group proved the most challenging to recruit. Additionally, levels of omnivore conflict were consistently low among farmers, which may have restricted our ability to relate animal attachment and omnivore conflict within this group. Furthermore, since our measure of attachment and solidarity required participants to nominate an animal that they frequently interacted with, we were unable to directly compare farmed-animal and pet attachment across the three groups. Future research should seek ways to overcome this logistical barrier, as well as explore farmer attachments in other contexts beyond the UK.

We have inferred that the diminished bonds farmers have with their farmed animals (vs. pets) is partly due to motivational factors. There remain potential alternative explanations for these results; for example, farmers tend to have many farmed animals, but fewer companion animals. As such, they may not engage deeply with any single farmed animal because there are few opportunities to spend quality, one-to-one time with them. Nonetheless, farmers in our study who cultivated a sense of solidarity with their farmed animals tended to experience more conflict about meat. Thus, while there are practical differences in the relationships farmers have with their farmed animals and companion animals, this does not rule out the presence of motivational factors.

Another limitation was the unequal distribution of gender in our groups. This was a practical limitation that reflects real-world differences: livestock farmers in the UK are predominantly male (Office for National Statistics, 2021), and meat avoiders in the UK tend to be female (Statista, 2020). Women tend to have greater conflict about meat than males (e.g., Ruby, 2012). Thus, the low percentage of females in the farmer group may partly explain their very low levels of meat conflict, beyond their personal investment in animal agriculture. Though gender might be a contributing factor, a comparison of male and female farmers revealed that women did not differ significantly in their level of conflict,  $M_{\text{rank}} = 44.28$ ,  $SD = 19.31$ , 95% CI [35.24, 53.31], compared to men,  $M_{\text{rank}} = 33.51$ ,  $SD = 20.80$ , 95% CI [27.72, 39.30],  $U(N_{\text{women}} = 20; N_{\text{men}} = 52) = 364.50$ ,  $Z = -1.96$ ,  $\eta^2 = .05$ ,  $p = .05$ . Furthermore, male farmers reported lower omnivore conflict,  $M_{\text{rank}} = 30.72$ ,  $SD = 19.60$ , 95% CI [25.26, 36.18], than non-farmer males,  $M_{\text{rank}} = 63.73$ ,  $SD = 18.99$ , 95% CI [57.21, 70.25],  $U(N_{\text{farmers}} = 52; N_{\text{non-farmers}} = 35) = 219.50$ ,  $Z = -5.99$ ,  $\eta^2 = .42$ ,  $p < .001$ . Thus, gender unlikely fully accounts for group differences.

## Future Directions

Additional work is needed to investigate the factors that might encourage individuals working in animal agriculture to grapple with the potential ethical issues at stake in modern-day meat production. We acknowledge that the issue of animal slaughter is ethically complex, and it is clear that many individuals, including farmers, find animal slaughter ethically justifiable. Nonetheless, with the growth of plant-based alternatives and the potential for cultured meat and dairy products to curtail the need for animal slaughter (e.g., Post, 2012), livestock farmers are likely to face increasing pressure to reckon with these societal innovations and trends. Thus, future research should continue to monitor the use of denial of choice as a dissonance-avoidance strategy as food systems continue to evolve.

Finally, further research is needed to better understand how farmers maintain a functional distance with their farmed animals, while investing in their wellbeing. Some research suggests that certain “humanising” actions, such as assigning names to individual animals and referring to them by name, can increase farm productivity, at least on dairy farms (Bertenshaw & Rowlinson, 2009). Thus, some degree of emotional bonding with farmed animals may, ironically, be in the commercial interests of some farmers. The realities of animal agriculture seem to pressure most farmers to strike a balance between securing the welfare of the animals in their care and maintaining a functional psychological distance from them. How this balance is managed, and the psychological implications of disrupting this balance, deserves continued investigation because of the welfare implications for both farmers and animals.

## Conclusion

Despite anecdotal evidence that livestock farmers regularly struggle with the realities of animal slaughter, we found quite low levels of conflict about meat among our sample of British farmers, lower than non-farmer meat eaters. These low levels of conflict were linked to reduced levels of attachment to farmed animals (relative to pets), reduced attribution of cognitive abilities to cows (relative to dogs), and reduced perception of choice about meat. These three “Ds”—*detachment*, *denial of mind*, and *denial of choice*—seem to enable farmers to sustain a positive view of livestock farming. Future research may uncover additional mechanisms of dissonance avoidance that farmers employ, as well as consider how these strategies are shaped as the market for meat alternatives evolves and expands.

---

**Funding:** The authors have no funding to report.

---

**Acknowledgments:** The authors have no additional (i.e., non-financial) support to report.

---

**Competing Interests:** Jared Piazza is an Associate Editor of the journal but played no editorial role in this particular article nor intervened in any form in the peer review process.

---

**Data Availability:** Data are freely available, see [Crashaw and Piazza \(2021\)](#), [Crashaw and Piazza \(2022a\)](#), and [Crashaw and Piazza \(2022b\)](#).

---

## Supplementary Materials

[Crashaw and Piazza \(2021\)](#) is a systematic review registered with the Wharton Credibility Lab, University of Pennsylvania (AsPredicted #74127, <https://aspredicted.org/zq3ah.pdf>) and includes hypotheses, materials, and an analysis plan. [Crashaw and Piazza \(2022a\)](#) contains an anonymized version of the data and study materials. [Crashaw and Piazza \(2022b\)](#) contains additional conceptual explanations, discussion of pre-registration deviations, and explanatory tables and scales.

### Index of Supplementary Materials

Crawshaw, C., & Piazza, J. (2021). *Are farmers conflicted about meat?* [Hypotheses, materials, and analysis plan; AsPredicted #74127]. Wharton Credibility Lab. <https://aspredicted.org/zq3ah.pdf>

Crawshaw, C., & Piazza, J. (2022a). *Supplementary materials to "How conflicted are farmers about meat? Livestock farmers' attachment to their animals and attitudes about meat"* [Anonymized version of the data and study materials]. OSF. <https://osf.io/q9ney/>

Crawshaw, C., & Piazza, J. (2022b). *Supplementary materials to "How conflicted are farmers about meat? Livestock farmers' attachment to their animals and attitudes about meat"* [Explanatory materials, scales and tables]. PsychOpen GOLD. <https://doi.org/10.23668/psycharchives.12172>



## References

- Amiot, C. E., & Bastian, B. (2017). Solidarity with animals: Assessing a relevant dimension of social identification with animals. *PLoS One*, *12*(1), Article e0168184.  
<https://doi.org/10.1371/journal.pone.0168184>
- Bard, K., Knight, S., Vrij, A., & Brandon, D. (2010). Human rights, animal wrongs? Exploring attitudes towards animal use and possibilities for change. *Society & Animals*, *18*(3), 251–272.  
<https://doi.org/10.1163/156853010X510771>
- Bastian, B., & Loughnan, S. (2017). Resolving the meat-paradox: A motivational account of morally troublesome behavior and its maintenance. *Personality and Social Psychology Review*, *21*(3), 278–299. <https://doi.org/10.1177/1088868316647562>
- Bastian, B., Loughnan, S., Haslam, N., & Radke, H. R. M. (2012). Don't mind meat? The denial of mind to animals used for human consumption. *Personality and Social Psychology Bulletin*, *38*(2), 247–256. <https://doi.org/10.1177/0146167211424291>
- Bedford, E. (2021, January 4). *Leading pets, ranked by household ownership in the United Kingdom (UK) in 2019/20*. Statista.  
<https://www.statista.com/statistics/308218/leading-ten-pets-ranked-by-household-ownership-in-the-united-kingdom-uk/>
- Bertenshaw, C., & Rowlinson, P. (2009). Exploring stock managers' perceptions of the human-animal relationship on dairy farms and an association with milk production. *Anthrozoos*, *22*(1), 59–69. <https://doi.org/10.2752/175303708X390473>
- Bock, B. B., van Huick, M. M., Prutzer, M., Kling Eveillard, F., & Dockes, A. (2007). Farmers' relationship with different animals: The importance of getting close to the animals. Case studies of French, Swedish and Dutch cattle, pig and poultry farmers. *International Journal of Sociology of Agriculture and Food*, *15*(3), 110–125. <https://edepot.wur.nl/52807>
- Bray, H. J., Zambrano, S. C., Chur-Hansen, A., & Ankeny, R. A. (2016). Not appropriate dinner table conversation? Talking to children about meat production. *Appetite*, *100*, 1–9.  
<https://doi.org/10.1016/j.appet.2016.01.029>
- Bruijnijis, M., Hogeveen, H., Garforth, C., & Stassen, E. (2013). Dairy farmers' attitudes and intentions towards improving dairy cow foot health. *Livestock Science*, *155*(1), 103–113.  
<https://doi.org/10.1016/j.livsci.2013.04.005>
- Buttler, B., & Walther, E. (2018). Measuring the meat paradox: How ambivalence towards meat influences moral disengagement. *Appetite*, *128*, 152–158.  
<https://doi.org/10.1016/j.appet.2018.06.011>
- Graça, J., Calheiros, M., & Oliveira, A. (2015). Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet. *Appetite*, *95*, 113–125. <https://doi.org/10.1016/j.appet.2015.06.024>
- Gray, H. M., Gray, K., & Wegner, D. M. (2007). Dimensions of mind perception. *Science*, *315*(5812), 619. <https://doi.org/10.1126/science.1134475>
- Hawthorne, G., & Elliott, P. (2005). Imputing cross-sectional missing data: Comparison of common techniques. *Australian and New Zealand Journal of Psychiatry*, *39*(7), 583–590.  
<https://doi.org/10.1080/j.1440-1614.2005.01630.x>

- Holcomb, R., Williams, R. C., & Richards, P. S. (1985). The elements of attachment: Relationship maintenance and intimacy. *Journal of the Delta Society*, 2(1), 28–34.
- IBM. (2017). IBM SPSS statistics for Windows (Version 25.0). IBM Corporation.  
<https://www.ibm.com/support/pages/downloading-ibm-spss-statistics-25>
- Kubberød, E., Ueland, Ø., Tronstad, A., & Risvik, E. (2002). Attitudes towards meat and meat-eating among adolescents in Norway: A qualitative study. *Appetite*, 38(1), 53–62.  
<https://doi.org/10.1006/appe.2002.0458>
- Office for National Statistics. (2021). *Annual population survey—Employment by occupation by sex: July 2020 to June 2021*. Nomis.  
<https://www.nomisweb.co.uk/datasets/aps168/reports/employment-by-occupation?compare=K02000001>
- Paul, E. S., & Serpell, J. A. (1993). Childhood pet keeping and humane attitudes in young adulthood. *Animal Welfare*, 2(4), 321–337.
- Peden, R. S. E., Camerlink, I., Boyle, L. A., Loughnan, S., Akaichi, F., & Turner, S. P. (2020). Belief in pigs' capacity to suffer: An assessment of pig farmers, veterinarians, students, and citizens. *Anthrozoos*, 33(1), 21–36. <https://doi.org/10.1080/08927936.2020.1694304>
- Post, M. J. (2012). Cultured meat from stem cells: Challenges and prospects. *Meat Science*, 92(3), 297–301. <https://doi.org/10.1016/j.meatsci.2012.04.008>
- Rothgerber, H. (2014). Efforts to overcome vegetarian-induced dissonance among meat eaters. *Appetite*, 79, 32–41. <https://doi.org/10.1016/j.appet.2014.04.003>
- Rothgerber, H., & Rosenfeld, D. L. (2021). Meat-related cognitive dissonance: The social psychology of eating animals. *Social and Personality Psychology Compass*, 15(5), Article e12592.  
<https://doi.org/10.1111/spc3.12592>
- Ruby, M. B. (2012). Vegetarianism: A blossoming field of study. *Appetite*, 58(1), 141–150.  
<https://doi.org/10.1016/j.appet.2011.09.019>
- Ruby, M. B., Rozin, P., Gendelman, B., Li, Y., & Peelish, N. (2022). Conflict around eating meat: Incidence, associations, and implications for behavioral change. Manuscript submitted for publication. La Trobe University.
- Söderfeldt, G. (2017, November 1). *Farmer goes vegan: 'I made the change because I didn't want to keep slaughtering pigs'*. PETA–UK.  
<https://www.peta.org.uk/blog/farmer-goes-vegan-made-change-didnt-want-keep-slaughtering-pigs/>
- Statista. (2020, June 16). *Share of adults who follow a vegan diet in Great Britain in 2019, by gender and age group*. Statista.  
<https://www.statista.com/statistics/1062343/adults-following-vegan-diet-in-great-britain-by-gender-and-age/>
- Wicker, E. (2017, July 2). *The beef farmer rescuing his cows from the slaughterhouse*. [Video]. BBC.  
<https://www.bbc.co.uk/news/av/magazine-40448684>

Wilkie, R. (2005). Sentient commodities and productive paradoxes: The ambiguous nature of human livestock relations in Northeast Scotland. *Journal of Rural Studies*, 21(2), 213–230.  
<https://doi.org/10.1016/j.jrurstud.2004.10.002>

Zeza, A., Pica-Ciamarra, U., Muger, H. K., Mwisomba, T., & Okello, P. (2016). *Measuring the role of livestock in the household economy: A guidebook for designing household survey questionnaires*. World Bank.  
<http://documents1.worldbank.org/curated/en/108351587037911099/pdf/Measuring-the-Role-of-Livestock-in-the-Household-Economy-A-Guidebook-for-Designing-Household-Survey-Questionnaires.pdf>



*Psychology of Human-Animal Intergroup Relations* (PHAIR) is an official journal of the PHAIR Society.



leibniz-psychology.org

PsychOpen GOLD is a publishing service by Leibniz Institute for Psychology (ZPID), Germany.